Depth Of Knowledge
Getting to the Heart of Rigor

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Presentation Links

http://bit.ly/2YPa3hQ

Indiana DEPARTMENT OF EDUCATION

Session Objectives

- Participants will know what D.O.K. is and what it is not.
- Participants will be able to identify the four DOK levels and the types of cognitive processing needed at each level.
- Participants will practice identifying the DOK level for example questions.
- Participants will apply DOK leveled questioning in their own lessons.

Depth of Knowledge

- What is D.O.K. to you?
- How do you get to the heart of rigor?

Depth Of Knowledge

- **The depth of understanding and cognitive reasoning required to answer or explain an assessment-related item or a classroom activity**

- **DOK Levels are *not* sequential.**
  - **Not a "taxonomy"**
  - **Four different ways to interact with content**

- **DOK levels are also *not* developmental.**

Seven MYTHS ABOUT RIGOR

If you have rigorous standards, you have a rigorous course.

Rigor means more work.

Rigor means harder.

Rigor is a matter of content.

Younger students cannot engage in rigorous instruction.

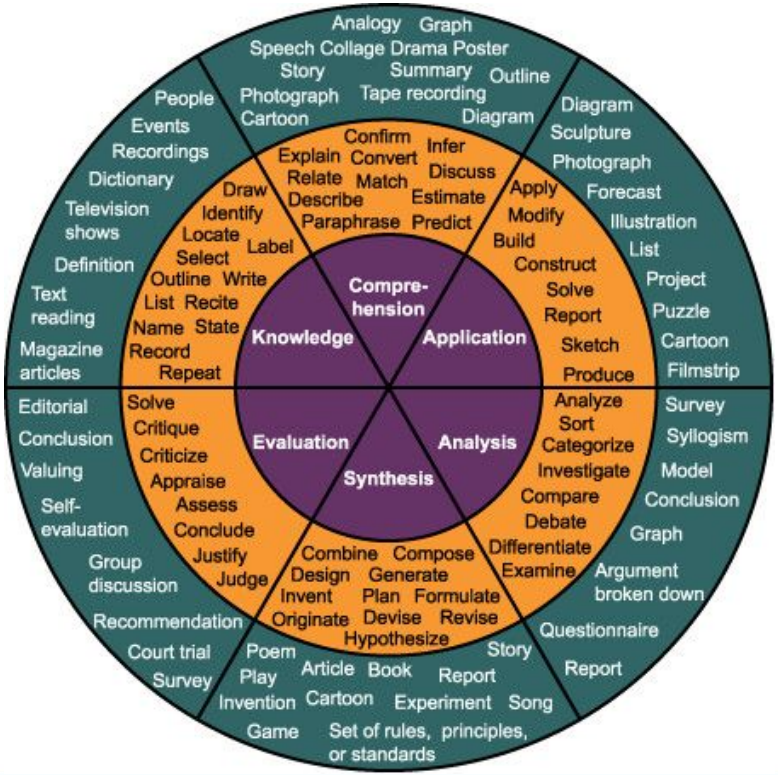
In order to engage in rigor, students must first master the basics.

Rigor is for the elite.

ASCD LEARN. TEACH. LEAD.

Bloom's Taxonomy

Wheel of Verbs



Depth Of Knowledge

DOK is NOT solely about the verb, but what *<u>follows</u>* the verb.

DOK 1

<u>Describe</u> three characteristics of the narrator.
Requires simple recall.

DOK 2

<u>Describe</u> the difference between two characters.
Requires cognitive processing to determine the differences.

DOK 3

<u>Describe</u> how a different point of view may affect the reader's understanding and bias.
Requires deep understanding of point of view and the text and a determination of effects.

Depth Of Knowledge

DOK is NOT solely about the verb, but what *follows* the verb.

DOK 1

Students will graph the point (1,6) in the first quadrant of the coordinate plane.

DOK 2

Students will graph the vertices of the reflected image of a triangle.

DOK 3

Given the coordinates for three vertices of a rectangle, students will graph the coordinates of the fourth vertex.

DOK Levels

DOK Level 1
Recall and
Reproduction

DOK Level 2
Skills and
Concepts

DOK Level 3
Strategic
Thinking

DOK Level 4
Extended
Thinking

DOK Level 1: Recall and Reproduction

- Requires **recall of information**, such as a fact, definition, term, or simple procedure and/or .
- Requires a **shallow understanding** of the topic or text.

ELA Example of DOK 1:

List the names of the characters who chased the Gingerbread Man.

DOK Level 1: Recall and Reproduction

- ***Requires recall of information, such as a fact, definition, term, or simple procedure and/or performing simple procedures.***

- ***Requires a shallow understanding of the topic or text.***

Math Example of DOK 1:

Solve. 9 + 4 =

DOK Level 1: Recall and Reproduction

- ***Requires recall of information, such as a fact, definition, term, or simple procedure and/or .***
- ***Requires a shallow understanding of the topic or text.***

ELA Example of DOK 1:

Who is telling the story?

DOK Level 1: Recall and Reproduction

- ***Requires recall of information, such as a fact, definition, term, or simple procedure and/or performing simple procedures.***

- ***Requires a shallow understanding of the topic or text.***

Math Example of DOK 1:

Multiply. 36 X 4 =

DOK Level 1: Recall and Reproduction

- ***Requires recall of information, such as a fact, definition, term, or simple procedure and/or .***
- ***Requires a shallow understanding of the topic or text.***

ELA Example of DOK 1:

On a graphic organizer write what is the problem in the story and how it is solved.

DOK Level 1: Recall and Reproduction

- ***Requires recall of information, such as a fact, definition, term, or simple procedure and/or performing simple procedures.***

- ***Requires a shallow understanding of the topic or text.***

Math Example of DOK 1:

The price of gasoline was $2.159 per gallon last week. This week the new price is $2.319 per gallon. Determine the percent of increase.

DOK Level 1: Recall and Reproduction

- Requires **recall of information**, such as a fact, definition, term, or simple procedure and/or .
- Requires a **shallow understanding** of the topic or text.

ELA Example of DOK 1:

What is the meaning of denouement?

DOK Level 1: Recall and Reproduction

- ***Requires recall of information, such as a fact, definition, term, or simple procedure and/or performing simple procedures.***

- ***Requires a shallow understanding of the topic or text.***

Math Example of DOK 1:

Students will identify a transformation within a plane.

DOK Level 2: Skills & Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

Example of DOK 2:
Read this sentence from the story.

Then a slow, black cloud had issued from the caverns and ascended into the heavens.

Which of these dictionary definitions of *issue* BEST fits the way the word is used in the sentence?

A publish
B terminate
C come out
D point from

DOK Level 2: Skills and Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → DOK 2

DOK 1 List the names of the characters who chase the Gingerbread Man.

DOK 2 Predict what might have happened if the gingerbread man was not caught by the fox.

What changed to make this DOK2?

DOK Level 2: Skills and Concepts

- Includes the engagement of some mental processing beyond recalling or reproducing a response.
- Requires students to make some decisions as to how to approach the question or problem.
- Actions imply more than one mental or cognitive process/step.

DOK 1 → DOK 2

DOK 1 Solve. 9 + 4 =

DOK 2 9 + 4 = 4 + ☐

What changed to make this DOK 2?

DOK Level 2: Skills and Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → DOK 2

DOK 1 Who is telling the story?

DOK 2 Identify the points of view from two versions of the same fairy tale. Compare/contrast their view of events.

What changed to make this DOK 2?

DOK Level 2: Skills and Concepts

- Includes the engagement of some mental processing beyond recalling or reproducing a response.
- Requires students to make some decisions as to how to approach the question or problem.
- Actions imply more than one mental or cognitive process/step.

DOK 1 → DOK 2

DOK 1 Multiply. 36 X 4 =

DOK 2 12.25 + 3.05 x 0.6=

What changed to make this DOK 2?

DOK Level 2: Skills and Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → **DOK 2**

DOK 1 On a graphic organizer write the problem in the story and how it is solved.

DOK 2 Dramatize the problem and solution in the story. How did you know? What were the characters thoughts and feelings?

What changed to make this DOK 2?

DOK Level 2: Skills and Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → **DOK 2**

DOK 1: The price of gasoline was $2.159 per gallon last week. This week the new price is $2.319 per gallon. Determine the percent of increase.

DOK 2: On a trip across the country, Justin determined that he would have to drive about 2,763 miles. What speed would he have to average to complete the trip in no more than 50 hours of driving time?

What changed to make this DOK 2?

DOK Level 2: Skills and Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → DOK 2

DOK 1 What is the meaning of denouement?

DOK 2 How would you summarize the denouement in this story?

What changed to make this DOK 2?

DOK Level 2: Skills and Concepts

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → **DOK 2**

DOK 1 Students will identify a transformation within a plane.

DOK 2 Students will perform a compound transformation of a geometric figure within a coordinate plane.

What changed to make it DOK 2?

DOK Level 3: Strategic Thinking

- ***Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning.***
- ***The cognitive demands are complex and abstract.***
- ***An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.***

Example of DOK 3:

The narrator makes several comments that hint at the outcome of the story. Give ONE example of a statement that suggests the outcome of the story. Then explain how this example helps the reader predict the outcome of the story.

DOK Level 3: Strategic Thinking

- ***Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning.***
- ***The cognitive demands are complex and abstract.***
- ***An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.***

DOK1 → DOK2 → DOK3

DOK 1 List the names of the characters who chase the Gingerbread Man.

DOK 2 Predict what might have happened if the gingerbread man was not caught by the fox.

DOK3 Formulate a plan to catch the gingerbread man and explain why you think it might work.

DOK Level 3: Strategic Thinking

- Requires <u>deep understanding</u> exhibited through planning, using evidence, and more demanding <u>cognitive</u> reasoning.
- The cognitive demands are <u>complex and abstract</u>.
- An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.

DOK 1 → DOK 2 → DOK 3

DOK 1 Solve. 9 + 4 =

DOK 2 9 + 4 = 4 + ☐

DOK 3 Using the digits 1 to 9, at most one time each, fill in the blanks to make the smallest sum.

__ __ + __ __ = __ __

What changed to make this DOK 3?

DOK Level 3: Strategic Thinking

- ***Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning.***
- ***The cognitive demands are complex and abstract.***
- ***An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.***

DOK 1 Who is telling the story?

DOK 2 Identify the points of view from two versions of the same fairy tale. Compare/contrast their view of events.

DOK 3 Justify the character's actions based on their version of the story. How does the character see things differently because of their point of view.

DOK Level 3: Strategic Thinking

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 ⟶ DOK 2 ⟶ DOK 3

DOK 1 Multiply. 36 X 4 =

DOK 2 12.25 + 3.05 x 0.6=

DOK 3 During the first race, 12 people run a 1.5 mile race. During the second race, 4 people run a 2.2 mile race. How many more total miles were run during the first race compared to the second race?

What changed to make this DOK 3?

DOK Level 3: Strategic Thinking

- ***Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning.***
- ***The cognitive demands are complex and abstract.***
- ***An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.***

DOK 1 **On a graphic organizer write the problem in the story and how it is solved.**

DOK 2 **Dramatize the problem and solution in the story. How did you know? What were the characters thoughts and feelings?**

DOK 3 **Using a talk show panel, have a cast of experts debate the points of the story's problem and solution.**

DOK Level 3: Strategic Thinking

- ***Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning.***
- ***The cognitive demands are complex and abstract.***
- ***An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.***

DOK 1 → **DOK 2** → **DOK 3**

DOK 3 A sweater that you really been want has just been placed on sale. The original cost was $63.99. The sale price is $47.99. What is the percent of decrease from the original price? You still do not have enough money saved up to purchase the sweater, so you wait just a little longer and the store now has an ad that states that all items currently on sale have been reduced by 1/3 of the sale price. What is the new sale price? What is the overall percent of decrease from the original price?

DOK Level 3: Strategic Thinking

- ***Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning.***
- ***The cognitive demands are complex and abstract.***
- ***An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3.***

DOK 1 **How can you find the meaning of denouement?**

DOK 2 **How would you summarize the denouement in this story?**

DOK 3 **What is your interpretation of this text? Support your rationale.**

DOK Level 3: Strategic Thinking

- ***Includes the engagement of some mental processing <u>beyond recalling or reproducing a response</u>.***
- ***Requires students to make some decisions as to <u>how to approach the question or problem.</u>***
- ***Actions imply more than one <u>mental or cognitive process/step</u>.***

DOK 1 → **DOK 2** → **DOK 3**

DOK 3 Students will perform a geometric transformation to meet specified criteria and then explain what does or does not change about the figure.

DOK Level 4: Extended Thinking

- **Requires high cognitive demand and is very complex.**
- **Students are expected to**
  - **make connections**
  - **relate ideas within the content or among content areas**
  - **select or devise one approach among many alternatives on how the situation can be solved.**
- **Due to the complexity of cognitive demand, DOK 4 often requires an extended period of time.**

Read the writing prompt below and complete the writing activity.

Changes

Nelson Mandela, the former president of South Africa and 1993 winner of the Nobel Peace Prize, wrote the following in his autobiography:

"There is nothing like returning to a place that remains unchanged to find the ways in which you yourself have altered." Write a narrative composition in which you tell about a person who returns to a familiar environment or situation and realizes that he or she has changed, while the place itself has remained the same. Your narrative composition could be based on your own experiences, those of a person you know or have read about, or something you have made up. In your writing describe the main character, the circumstances that took the character away from the familiar environment, and the character's experiences upon returning to that environment.

DOK Level 4: Extended Thinking

- **Requires high cognitive demand and is very complex.**
- **Students are expected to**
  - make connections
  - relate ideas within the content or among content areas
  - select or devise one approach among many alternatives on how the situation can be solved.
- **Due to the complexity of cognitive demand, DOK 4 often requires an extended period of time.**

Some examples of ELA activities that require complex reasoning, planning, developing, and thinking are:

- **Write a thesis, draw conclusions from multiple sources**
- **Create an alternate solution for the story and describe how this new solution changes the outcome of the story and why you chose to change it.**
- **Develop an alternate ending for the story**

DOK Level 4: Extended Thinking

- ***Requires high cognitive demand and is very complex.***

- ***Students are expected to***
  - *make connections*
  - *relate ideas within the content or among content areas*
  - *select or devise one approach among many alternatives on how the situation can be solved.*

- ***Due to the complexity of cognitive demand, DOK 4 often requires an extended period of time.***

Some examples of Math activities that require complex reasoning, planning, developing, and thinking are:

- **Collect data over time taking into consideration a number of variables and analyze the results.**
- **Develop a rule for a complex pattern and find a phenomenon that exhibits that behavior.**
- **Critique experimental designs.**

D.O.K. Game Show Style

D.O.K. Resources

D.O.K.Question Stems and Possible Activities

2nd grade
DOK questioning strategies lessons

Many of the examples were taken from this document. It provides some content examples as well!

Webb's Depth of Knowledge Guide

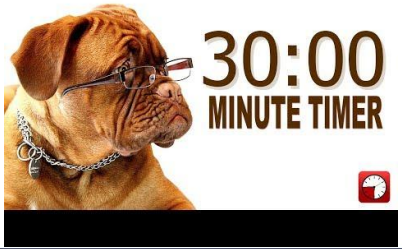
Career and Technical Education Definitions

Let's Practice!

- Each group has an envelope of potential assessment questions.
- Organize your questions into four groups based on their D.O.K. level.
- When your group is finished, retrieve an answer sheet from me to check your answers.

Your Turn!

Using a current assessment, identify the D.O.K. levels used, and make sure you have a variety of D.O.K. levels represented.



Next Steps

- Continue to evaluate your assessment questions for D.O.K. variety.
- Be intentional in your verbal and written questioning.

We Value Your Feedback!

Thank you for leaving your feedback so we can provide the best possible professional development!

Click here or scan here!

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